IN THE CLAIMS

Please amend claims 12, 18, 26, and 34, and add new claims 35-36 as follows:

1. (PREVIOUSLY PRESENTED) A method for forming a nitride semiconductor device, comprising:

(a) growing one or more non-polar a-plane gallium nitride (GaN) layers on a substrate, resulting in a grown surface of the non-polar a-plane GaN layers that is a non-polar plane; and

(b) growing one or more non-polar a-plane (Al,B,In,Ga)N layers directly off of the grown surface of the non-polar a-plane GaN layers to form at least one non-polar a-plane quantum well, wherein a quantum well width required for optimal emission is larger for the non-polar a-plane quantum well than for a polar c-plane quantum well.

2-5. (CANCELED)

6. (ORIGINAL) The method of claim 1, wherein the substrate is a sapphire substrate.

7. (ORIGINAL) The method of claim 1, wherein the growing step (a) comprises:

(1) annealing the substrate;

(2) depositing a nitride-based nucleation layer on the substrate;

(3) growing the GaN layer on the nucleation layer; and

(4) cooling the GaN under a nitrogen overpressure.

8. (CANCELED)

9. (ORIGINAL) A device manufactured using the method of claim 1.

10. (PREVIOUSLY PRESENTED) A nitride semiconductor device comprising one or more non-polar a-plane gallium nitride (GaN) layers grown on a substrate, and one or more non-polar a-plane quantum wells formed from one or more non-polar a-plane (Al,B,In,Ga)N layers grown off of a grown surface of the non-polar a-plane GaN layers, wherein the nitride semiconductor device is created using a process comprising:

(a) growing one or more non-polar a-plane gallium nitride (GaN) layers on a substrate, resulting in a grown surface of the non-polar a-plane GaN layers that is a non-polar plane; and

(b) growing one or more non-polar a-plane (Al,B,In,Ga)N layers off of the grown surface of the non-polar a-plane GaN layers to form at least one non-polar a-plane quantum well, wherein a quantum well width required for optimal emission is larger for the non-polar a-plane quantum well than for a polar c-plane quantum well.

11. (PREVIOUSLY PRESENTED) A nitride semiconductor device, comprising:

(a) one or more non-polar a-plane gallium nitride (GaN) layers grown on a substrate, resulting in a grown surface of the non-polar a-plane GaN layers that is a non-polar plane; and

(b) one or more non-polar a-plane quantum wells formed from one or more non-polar a-plane (Al,B,In,Ga)N layers grown off of the grown surface of the non-polar a-plane GaN layers to form at least one non-polar a-plane quantum well, wherein a quantum well width required for optimal emission is larger for the non-polar a-plane quantum well than for a polar c-plane quantum well.

12. (CURRENTLY AMENDED) The method of claim 1, wherein the non-polar a-plane quantum well's width ranges from approximately [[20]] <u>greater than 40</u> Å to approximately 70 Å.

13. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well has a doped barrier.

14. (PREVIOUSLY PRESENTED) The method of claim 13, wherein the doped barrier is doped with silicon.

15. (PREVIOUSLY PRESENTED) The method of claim 14, wherein the doped barrier is doped with silicon with a dopant concentration of 2×10^{18} cm^{-3}.

16. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well is a GaN/AlGaN quantum well.

17. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the non-polar a-plane quantum well's width ranges from more than 40 Å to approximately 70 Å in order to optimize emission intensity from the non-polar a-plane quantum well.

18. (CURRENTLY AMENDED) The method of claim 1, wherein a maximum emission intensity from the non-polar a-plane quantum well is associated with <u>the</u> non-polar a-plane quantum well width of approximately 50 Å.

19. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the non-polar a-plane quantum well has an optimal width of 52 Å.

20.-23. (CANCELED)

24. (PREVIOUSLY PRESENTED) The method of claim 1, wherein an optimal well width of the non-polar a-plane quantum well is determined primarily by material quality, interface roughness, and excitonic Bohr radius.

25. (PREVIOUSLY PRESENTED) The device of claim 11, wherein the substrate is a sapphire substrate.

26. (CURRENTLY AMENDED) The device of claim 11, wherein the quantum well's width ranges from approximately [[20]] <u>greater than 40</u> Å to approximately 70 Å.

27. (PREVIOUSLY PRESENTED) The device of claim 11, wherein the quantum well has a doped barrier.

28. (PREVIOUSLY PRESENTED) The device of claim 26, wherein the doped barrier is doped with silicon.

29. (PREVIOUSLY PRESENTED) The device of claim 27, wherein the doped barrier is doped with silicon with a dopant concentration of 2×10^{18} cm^{-3}.

30. (PREVIOUSLY PRESENTED) The device of claim 11, wherein the quantum well is a GaN/AlGaN quantum well.

31. (PREVIOUSLY PRESENTED) The device of claim 11, wherein the non-polar a-plane quantum well's width ranges from more than 40 Å to approximately 70 Å in order to optimize emission intensity from the non-polar a-plane quantum well.

32. (PREVIOUSLY PRESENTED) The device of claim 11, wherein a maximum emission intensity from the non-polar a-plane quantum well is associated with the non-polar a-plane quantum well width of approximately 50 Å.

33. (PREVIOUSLY PRESENTED) The device of claim 11, wherein the non-polar a-plane quantum well has an optimal width of 52 Å.

34. (CURRENTLY AMENDED) The ~~method~~ device of claim 11, wherein an optimal well width of the non-polar a-plane quantum well is determined primarily by material quality, interface roughness, and excitonic Bohr radius.

35. (NEW) The method of claim 1, wherein the non-polar a-plane quantum well width is greater than 40 Å.

36. (NEW) The device of claim 11, wherein the non-polar a-plane quantum well width is greater than 40 Å.